

MULTI-CORE & MULTI-PROTOCOL – THE CAPABILITIES ARE ENDLESS



Laird Connectivity's newest edition to their Nordic Semiconductor based Bluetooth LE portfolio, is the most advanced, most secure, and highest performing dual core MCU architecture wireless solution available. The BL5340 series of robust, tiny modules feature the **Nordic nRF5340 SoC**. It directly targets the highest performance with the lowest power budget, with variants featuring integrated Nordic **nRF21540 PA/LNA** for higher TX Power applications. Featuring Bluetooth 5.2 including Isochronous Channels and LE Audio, the BL5340 supports next generation Bluetooth audio for stereo streaming and broadcast audio.

The dual core **Arm® Cortex M33** microcontrollers enable you to run a low power core focused purely on wireless connectivity, with a second higher performance core targeted for the end application itself. This further extends the multi-protocol capabilities of the product: **Bluetooth LE, 802.15.4 (Thread/Zigbee) and NFC**. It's further enhanced with an ARM CryptoCell-312 including trusted execution, root-of-trust, and secure key storage security features.

The BL5340 series brings out all nRF5340 hardware features and capabilities including **USB access**, up to **+10 dBm** certified for PA version (+3 dBm from SoC) transmit power, from **1.7V to 5.5V** supply considerations, and a **true industrial operating range of -40 to 105°C**. Complete regulatory certifications enable faster time to market and reduced development risk completes Laird Connectivity's simplification of your next multi-protocol wireless design!

- **Nordic nRF5340** – 7x7 QFN with 48 GPIOs available.
- **Multi-protocol support:** Bluetooth 5.2 LE, 802.15.4 (Thread/Zigbee), NFC
- **Dual Cortex M33** microcontroller cores
 - Application processor - 128/64 MHz M33 – 1 MB Flash/512 KB RAM (Including DSP Instructions)
 - Network processor - 64 MHz M33 – 256 KB Flash/64KB RAM
- **Most configurable interfaces:** - USB, UART, QSPI, SPI, I²S, I²C, PDM, PWM, ADC, GPIO, QDEC, Comparator, Low Power Comparator
- **Additional SoC Hardware Features** like RNG, WDT, temperature sensor, floating point unit, inter-processor communication, debug trace
- **Extended Industrial Temperature Rating** (-40° to +105°C)
- **Module Choice:** Main module (BL5340 with nRF5340) or **Power Amplified** variant (BL5340 PA with nRF5340 + nRF21540)
- **Antenna choice** – integrated pre-certified **PCB or Trace pad** options
- **Small form factor:** as small as 15 x 10 x 2.2 mm (BL5340)
- **Development choice:** Zephyr RTOS or utilize Nordic nRF Connect SDK
- **Bluetooth LE:** Peripheral/Central, 2 Mbps (high throughput), LE Coded (long range), AoA/AoD, LE Audio/Isochronous Channels, Mesh
- **Advanced Security:** ARM TrustZone®, Root of Trust, ARM CryptoCell-312 & KMU, Access Control Lists, System Protection Unit, Encrypted QSPI
- **Firmware Over the Air (FOTA)** via MCUboot and Zephyr
- **Hostless operation** – Dual Core MCU reduces BOM
- Built on **decades of Nordic experience:** BL600/651/652/653/653μ/654
- **Fully featured development kits** to jump start Bluetooth LE development

FEATURES AT A GLANCE



SECURE, FLEXIBLE DUAL CORE M33 ARCHITECTURE

Dual cores supporting dedicated application and network processing all with secure trusted execution with Arm TrustZone and CryptoCell-312.



SOFTWARE FLEXIBILITY AND SPEED TO MARKET

Develop with either Zephyr RTOS or the Nordic's nRF Connect SDK. Use our extensive sample apps and out of box demo to speed your development



TRUE INDUSTRIAL OPERATING RANGE

Designed and certified to the highest industrial temperature range of -40°C to +105°C for every component utilized.



GLOBAL APPROVALS – MAKE YOURSELF AT HOME

Carries FCC, ISCED, EU, UKCA, RCM, MIC for Bluetooth & 802.15.4, and Bluetooth SIG approvals.



PERSONAL SUPPORT FROM DESIGN TO MANUFACTURE

Our industry-renowned support is passionate about helping you speed your design to market.



APPLICATION AREAS



Smart Building



Asset Tracking



Secure Medical Peripherals



Industrial Automation

KEY SPECIFICATIONS

| CATEGORY | FEATURE | SPECIFICATION |
|--------------------------------|--|--|
| Wireless Specification | Bluetooth® | v5.2 |
| | 802.15.4 | Thread and Zigbee |
| | NFC | Type 2/4 Tags |
| | TX Power (radiated – inc. 2dBi antenna gain) | BL5340 Up to + 5 dBm. Configurable down to -38 dBm BL5340 PA Up to + 10 dBm. Configurable down to -41 dBm |
| | Receive Sensitivity | BL5340 -98.0 dBm (typical @ Bluetooth LE 1 Mbps), -104 dBm (typical @ Bluetooth LE 125 kbps) BL5340 PA TBD |
| | Link Budget | BL5340 101.0 dB (@Bluetooth LE 1 Mbps), 107 dB (@Bluetooth LE 125 kbps) BL5340 PA TBD |
| | Antenna Options | Integrated PCB trace antenna or RF trace pin for external antennas |
| | Raw Data Rates (Air) | 1 Mbps, 2 Mbps, 500 kbps, 125 kbps |
| | UART Interface | TX, RX, CTS, RTS, DTR, DSR, DCD, RI (GPIO). Default: 115200, N, 8, 1. Configurable from 1200 bps to 1 Mbps |
| Host Interface and Peripherals | USB Interface | 2 pins – USB 2.0 slave, up to 12Mbps |
| | Other | Up to 48 multifunction GPIO's that can provide: <ul style="list-style-type: none"> Up to 4 UART (4 GPIO pins each) 8 ADC channels (1 pin each) Up to 4 I2C (2 GPIO pins each) Up to 5 SPI Master (4 GPIO pins including CS each) 1 PDM (2 GPIO pins) 1 I2S (5 GPIO pins) 2 GPIO pins for 32.768 kHz crystal 2 GPIO pins for NFC PWM output on 16 pins QSPI |
| Key Bluetooth LE Features | Bluetooth Low Energy | <ul style="list-style-type: none"> GATT client/server – Any adopted/custom services Central/Peripheral roles Bluetooth mesh 2M PHY LE Coded PHY LE Audio w/ Isochronous streams (BT v5.2) AoA / AoD LE Advertising Extensions LE secure connections Data packet length extensions LE privacy v1.2 DTM Firmware (Test Modes) |
| Programming Options | Nordic nRF Connect SDK | Software/Support available from Nordic directly https://devzone.nordicsemi.com/ |
| | Zephyr RTOS | Software/Support available from https://www.zephyrproject.org/ |
| FW upgrade | | Via UART, SWD, or Bluetooth LE – nRF Connect SDK Via UART, SWD, or Bluetooth LE – Zephyr |
| Supply Voltage | | 1.7V – 5.5V – BL5340 variants 3.0V – 3.6V – BL5340 PA variants |
| Power Consumption | Current - BL5340 only | Max Peak Radio Current (@ +3 dBm TX) – 5.3 mA (DCDC at 3V) Max Peak Radio Current (@ 0 dBm TX) – 4.1 mA (DCDC at 3V) |
| | | System ON – 1.3 µA (wake on any event) |
| | | System OFF – 0.9 µA (wake on reset) |
| Physical | Dimensions | 15 mm x 10 mm x 2.2 mm - BL5340 variants 21 mm x 10 mm x 2.2 mm – BL5340 PA variants |
| Environmental | Temp Range | -40°C to +105°C |
| Miscellaneous | Lead Free | Lead-free and RoHS-compliant |
| | Development Kit | Development board and free software tools |
| Development Tools | Utilities | Nordic nRF Connect - Android and iOS applications |
| Qualifications | Bluetooth® | Complete Declaration ID |
| Regulatory | Approvals | FCC/ISED/EU/UKCA/MIC/RCM - All BL5340 Series. Bluetooth & 802.15.4 certified |

For full specifications on BL5340 modules, please see the appropriate datasheet.

ORDERING INFORMATION

| PART # | DESCRIPTION |
|--------------|--|
| 453-00052R | BL5340 series - Multi-Core/Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) – Integrated antenna (Tape/Reel) |
| 453-00053R | BL5340 series - Multi-Core/Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) – Trace pin (Tape/Reel) |
| 453-00052C | BL5340 series - Multi-Core/Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) – Integrated antenna (Cut Tape) |
| 453-00053C | BL5340 series - Multi-Core/Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) – Trace pin (Cut Tape) |
| 453-00052-K1 | Development kit for BL5340 Multi-Core/Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) – Integrated antenna |
| 453-00053-K1 | Development kit for BL5340 Multi-Core/Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) - Trace pin (Ext antenna) |
| 453-00068R | BL5340 PA - Multi-Core/Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) – Integrated antenna (Tape/Reel) |
| 453-00069R | BL5340 PA Multi-Core/Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) – Trace pin (Tape/Reel) |
| 453-00068C | BL5340 PA - Multi-Core/Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) – Integrated antenna (Cut Tape) |
| 453-00069C | BL5340 PA - Multi-Core/Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) – Trace pin (Cut Tape) |
| 453-00068-K1 | DVK for BL5340 PA - Multi-Core/Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) – Integrated antenna |
| 453-00069-K1 | DVK for BL5340 PA - Multi-Core/Protocol - Bluetooth® + 802.15.4 + NFC Module (Nordic nRF5340) – Trace pin (external antenna) |

For documentation, software, sample apps and more visit:
<https://www.lairdconnect.com/BL5340-Series>

